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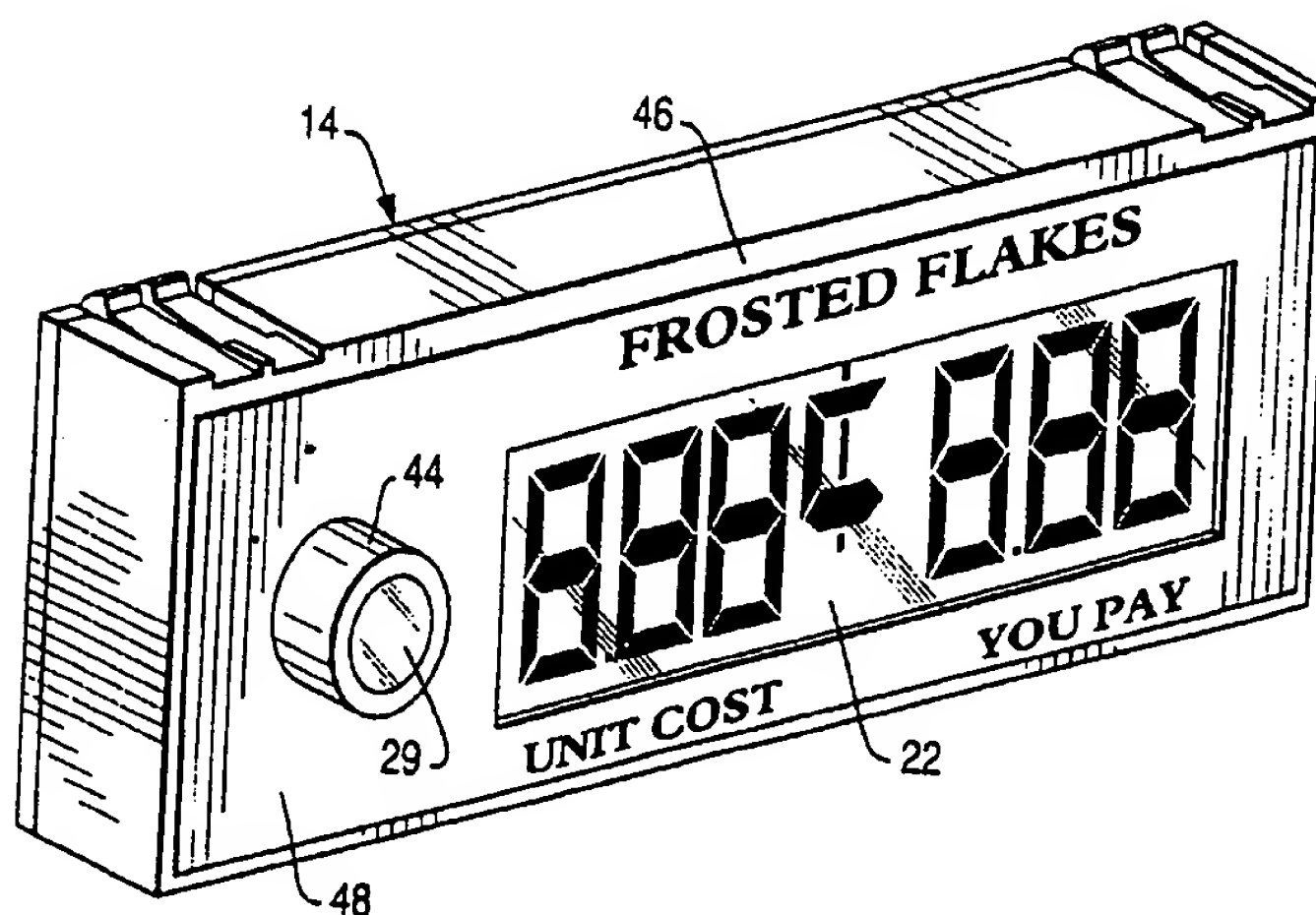
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(54) **Electronic price label having a promotional indicator light**

(57) An electronic price label (EPL) 14 is provided with lighting means such as LEDs 29 on the front surface of its housing for attracting attention of customers to a merchandise item associated with the EPL 14. The ap-

plication of power to the lighting means is controlled by a control circuit 16, 42 in response to commands from a remote controlling computer 12 or in response to movement of a push-button switch 44 provided on the EPL housing.

FIG. 5



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Description

The present invention relates to electronic price label (EPL) systems, and in particular to an electronic price label having a promotional indicator light.

EPL systems typically include a plurality of EPLs, each associated with a particular product on display in large retail establishments such as supermarkets or department stores. The EPLs are typically attached to a rail along the leading edge of a shelf on which items of the associated product are stored and display the price of the product item by means of a semi-transparent liquid crystal display (LCD). In large retail establishments, thousands of individual EPLs may be used in order to display the prices of all products which are available for purchase within the store. Each EPL within a retail establishment is typically coupled to a central EPL computer in which information relating to the EPL is stored in memory in an EPL data file. Price information displayed by the EPL is stored in memory in a price look-up (PLU) file.

In order to keep the cost of EPLs to a minimum, only minimal information such as the item price and price per unit is typically displayed on an EPL. Other product information (e.g. item descriptions, bar code labels, package size, product codes, customer information, etc.) that changes infrequently is often displayed on paper overlays attached to the EPL. Such paper overlays may also be used when product items are subject to a special promotion, such as where certain products may be offered at a lower retail price than usual or where special offers or prizes may be associated with the purchase of the product. Alternatively, the individual product items which are subject to the promotion are marked with special tags or labels, or sometimes large banners or notices are installed on or adjacent the shelves on which the product is stored, so as to convey the information regarding the product to a customer. These overlays, tags, paper price labels, banners or notices must be printed or marked with the appropriate information and must be installed and removed manually by store personnel. This procedure is time-consuming, inefficient and costly. Moreover at the end of a product promotion, the price information stored within the PLU file of the EPL computer may change before or after the promotional overlays, tags or labels etc., are removed resulting in a price discrepancy between the price displayed on the EPL and that on the promotional overlay, tag or label etc. causing customer confusion.

It is an object of the present invention to provide an efficient and cost effective manner of promoting a product without the use of paper overlays, tags, labels, banners or other notices and in which the risk of customer confusion is minimized.

In accordance with the present invention there is provided an electronic price label (EPL) comprising

a power supply ;

lighting means powered by the power supply for attracting customer attention to a merchandise item associated with the EPL; and
a control circuit for controlling the application of power from the power supply to the lighting means.

In one preferred embodiment, the application of power to the lighting means is controlled in response to lighting means control commands from a remote computer.

In a further preferred embodiment, the application of power to the lighting means may be controlled in response to manual movement of a push-button switch located on the EPL housing.

Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Fig. 1 is a block diagram of an EPL system including an EPL according to a first embodiment of the present invention;

Fig. 2 is a perspective view of the EPL of Figure 1, having promotional indicator lights located at each corner of the front surface of the EPL housing;

Fig. 3 is a perspective view of the EPL of Figure 1 having promotional indicator lights located along the left and right edges of the front surface of the EPL housing;

Fig. 4 is a block diagram of an EPL system including an EPL according to a second embodiment of the present invention; and

Figure 5 is a perspective view of the EPL of Figure 4, having a promotional indicator light located in a push-button switch on the front surface of the EPL housing.

Referring to Figure 1, the electronic price label (EPL) system 10 shown therein comprises an electronic price label computer 12 which is associated with a memory unit 34 and which communicates with a plurality of electronic price labels 14 (EPLs), only one of which represented in Figure 1. Communication between the EPL computer 12 and the individual EPLs 14 may be by remote communication such as radio or infrared communication, by cable or by a combination of both.

Each EPL 14 includes a control circuit 16, a power source 18, a memory unit 20, a display unit 22, a transceiver 24 and a light emitting diode (LED) unit 28. The control circuit 16 controls the internal operation of the EPL 14 including the application of power by the power source 18 to the LED unit 28 and the display of information by the display unit 22.

The power source 18 supplies power to the LED unit 28 and preferably comprises one or more batteries. The memory unit 20 stores product information, price change information and other data necessary for the operation of the EPL 14. The display unit 22 is preferably a liquid crystal display (LCD) and displays the price of

the product item with which the EPL 14 is associated. The transceiver 24 receives price change and other commands from and transmits response commands to the EPL computer 12. The LED unit 28 comprises a plurality LEDs or other suitable illumination devices which may be of the same or different colours. For example, different coloured LEDs may be used to indicate different types of product promotions such as temporary price reduction or a special offer where two products may be purchased for the price of one.

The EPL computer 12 records, schedules and transmits all commands including price change commands and diagnostic commands to the EPL 14, and analyses status commands from the EPL 14. The memory unit 34 associated with the EPL computer 12 includes an EPL basic data file 36 which contains records for all the EPLs of the retail system 10 in which general product information, identification data, product price verifier data for the product with which the EPL is associated and LED status data for the EPL 14 is stored. The control software 30 of the EPL computer 12 includes LED control software 32 which transmits an LED control message to turn on/off the LEDs of the LED unit 28 based upon the LED status data for EPL 14 stored in the EPL data file 36 of the memory unit 34.

Referring to Figures 2 and 3, two EPLs 14 which include promotional indicator lights are shown. In Figure 2, the LED unit 28 includes four LEDs 29, one LED located at each of the four corners of the front surface of the housing of EPL 14. In Figure 3, the LED unit 28 includes two elongate LED arrays 29, one located at each side of front surface of the EPL 14. Clear plastic covers protect the LEDs 29 which are also visible from the sides of the EPL 14.

A LED status indicator (i.e., on or off) is stored within the record of EPL 14 in EPL data file 26. If the status indicator indicates that the LEDs 29 of the LED unit 28 of EPL 14 should be ON, EPL computer 12 transmits a message addressed to EPL 14 containing a command to turn on the LEDs 29. The transceiver 24 of EPL 14 receives the message from the EPL computer 12 and transmits an acknowledgment signal to the EPL computer 12. The control circuit 16 controls the power source 18 to supply power to the LED unit 28 causing the LEDs 29 to be switched on. When switched on, the LEDs 29 are luminous enough to allow the EPL 14 to be distinguishable from other surrounding EPLs and so attracts the attention of the customer to the items with which the EPL 14 is associated.

If the status indicator of the EPL data file 36 indicates that the LEDs 29 of the LED unit 28 of EPL 14 should be OFF, EPL computer 12 transmits a message addressed to EPL 14 containing a command to turn off the LEDs 29. The transceiver 24 of EPL 14 receives the message from the EPL computer 12 and transmits an acknowledgment signal to the EPL computer 12. The control circuit 16 controls the power source 18 so as to discontinue the application of power to the LED unit 28

causing the LEDs 29 to be switched off.

Figures 4 and 5 show an alternative embodiment of the EPL 14 in which the LED unit 28 of the EPL 14 may operate in a manual mode where the LED push-button 30 is manually activated by store personnel, or in an "automatic" mode where the LED unit 28 is controlled automatically by the EPL computer 12. The LED unit 28 includes a LED control circuit 42 which controls the application of power to the LED 29 of the LED unit 28 and a LED push button switch 44 which includes the LED 29 internally. As shown in Figure 5, the LED push-button switch 44 is located on the front surface of the housing of the EPL 14 so that the LED 29 of the EPL 14 can be manually activated and deactivated by store personnel. Power is applied to the internal LED 29 when the push button switch 44 is manually engaged in the "ON" position and power is removed from the LED 29 by the LED control circuit 42 when the push button switch 44 is engaged in the "OFF" position. When in the "on" position, LED 29 is luminous enough to allow the EPL 14 to be distinguishable from other surrounding EPLs and attracts the attention of the customer to the items with which the EPL 14 is associated.

Power supply 18 includes a first battery, which is typically a non-replaceable battery 40, and a second battery, which is a replaceable battery 38. Non-replaceable battery 40 is the primary power supply for the EPL 14 and replaceable battery 38 is the primary power supply for the LED unit 28. The LED control circuit 42 controls the application of power to the LED unit 28 while the control circuit 16 controls the application of power to the various components of the EPL 14 and. Thus, the non-replaceable battery 40 may act as a backup power supply for the LED unit 28 while the replaceable battery 38 may act as a backup power supply for the other components of the EPL 14. It should be understood that the power supply may include solar cells or a combination of batteries and solar cells.

The control circuit 16 receives LED control messages via the transceiver 24 from the EPL computer 12 and transmits control instructions within the messages to the LED control circuit 42. The LED control circuit 42 may operate so that power is supplied continuously by the power source 18 to the LED 29 or is supplied as a pulse signal so that the LED 29 appears to flash. The EPL data file 36 also stores LED operating information (manual/ auto - off, on, continuous/pulse power application) to allow EPL computer 12 to control the operation of the LED unit 28 of the EPL 14. When the LED unit 28 is being controlled by the EPL computer 12 in the automatic mode, the LED control circuit 42 disables the LED push button switch 44.

The use of a LED push button switch 44 incorporating an LED allows store personnel to easily activate the LED 29 of the EPL 14 associated with a product which is subject to a promotion so as to attract the attention of customers to the promotion. Similarly when the product promotion ends, the LED 29 of the EPL 14 associated

with the product may be switched off by store personnel. It should be understood that other types of lighted switches and light/switch combinations may be used instead of the LED push button switch 44, but the LED push-button switch 44 is particularly suitable because it requires very little area on the front surface of the housing of the EPL 14 in comparison to that which might otherwise be used by an overlay.

a permanent battery (40); and
a replaceable battery (38);

wherein the control circuit (16, 42) applies power from the permanent battery (40) to the lighting means (29) only when the replaceable battery (38) is exhausted.

Claims

1. An electronic price label (EPL) (14) comprising:
 - a power supply (18);
 - lighting means (29) powered by the power supply (18) for attracting customer attention to a merchandise item associated with the EPL (14); and
 - a control circuit (16, 42) for controlling the application of power from the power supply (18) to the lighting means (29).
2. An electronic price label (14) according to claim 1, characterized in that the control circuit (16, 42) controls the application of power to the lighting means (29) in response to control commands from a remote computer (12).
3. An electronic price label (14) according to claim 2, characterized in that control commands are transmitted by the controlling computer (12) in response to lighting means status data stored in a data file (36) of memory means (34) associated with the controlling computer (12).
4. An electronic price label (14) according to any preceding claim, characterized in that the control circuit (42) controls the application of power to the lighting means (29) in response to manual activation of a push-button switch (44).
5. An electronic price label (14) according to claim 4, characterized in that the lighting means (29) is contained within the push-button switch (44).
6. An electronic price label (14) according to any preceding claim, characterized in that the lighting means (29) comprises at least one light emitting diode (LED).
7. An electronic price label (14) according to any preceding claim, characterized in that the power supply (18) comprises at least one battery (38, 40).
8. An electronic price label (14) according to claim 7, characterized in that the power supply (18) comprises:
 - a permanent battery (40); and
 - a replaceable battery (38);
 wherein the control circuit (16, 42) applies power from the permanent battery (40) to the lighting means (29) only when the replaceable battery (38) is exhausted.
9. An electronic price label (14) according to any preceding claim, characterized by a generally rectangular housing, wherein the lighting means (29) is located on a front surface of the housing.

FIG. 1

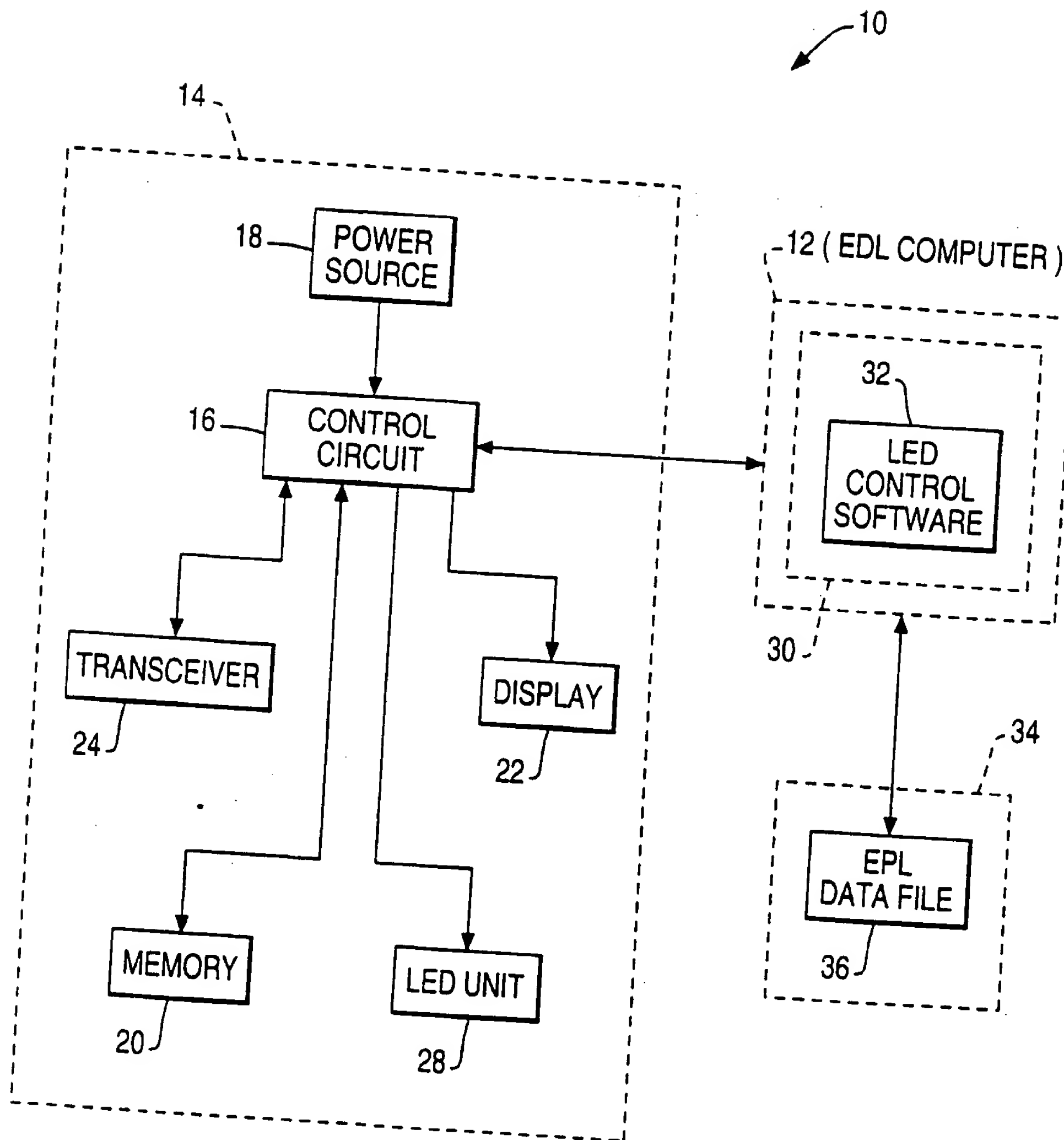


FIG. 2

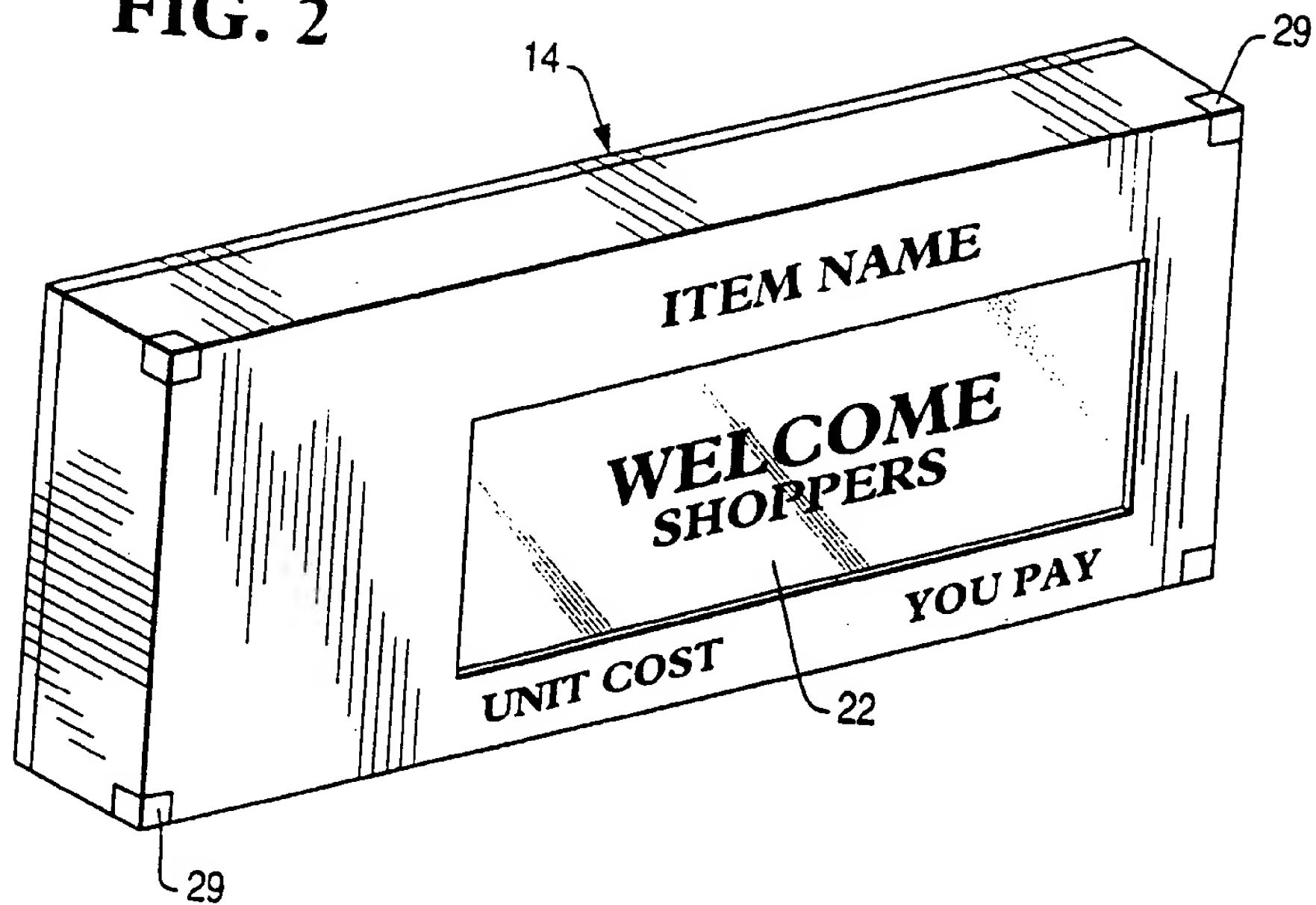


FIG. 3

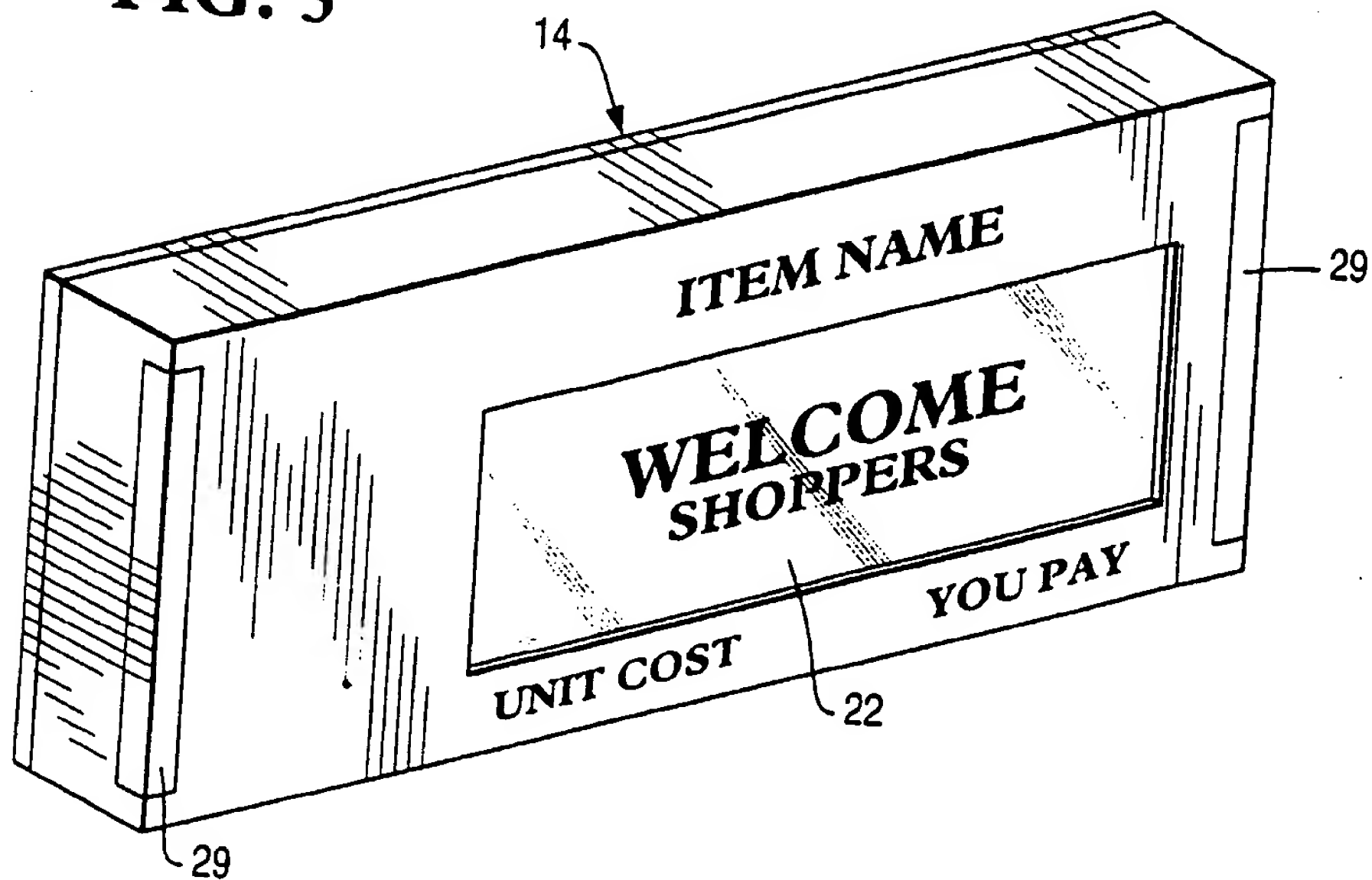


FIG. 4

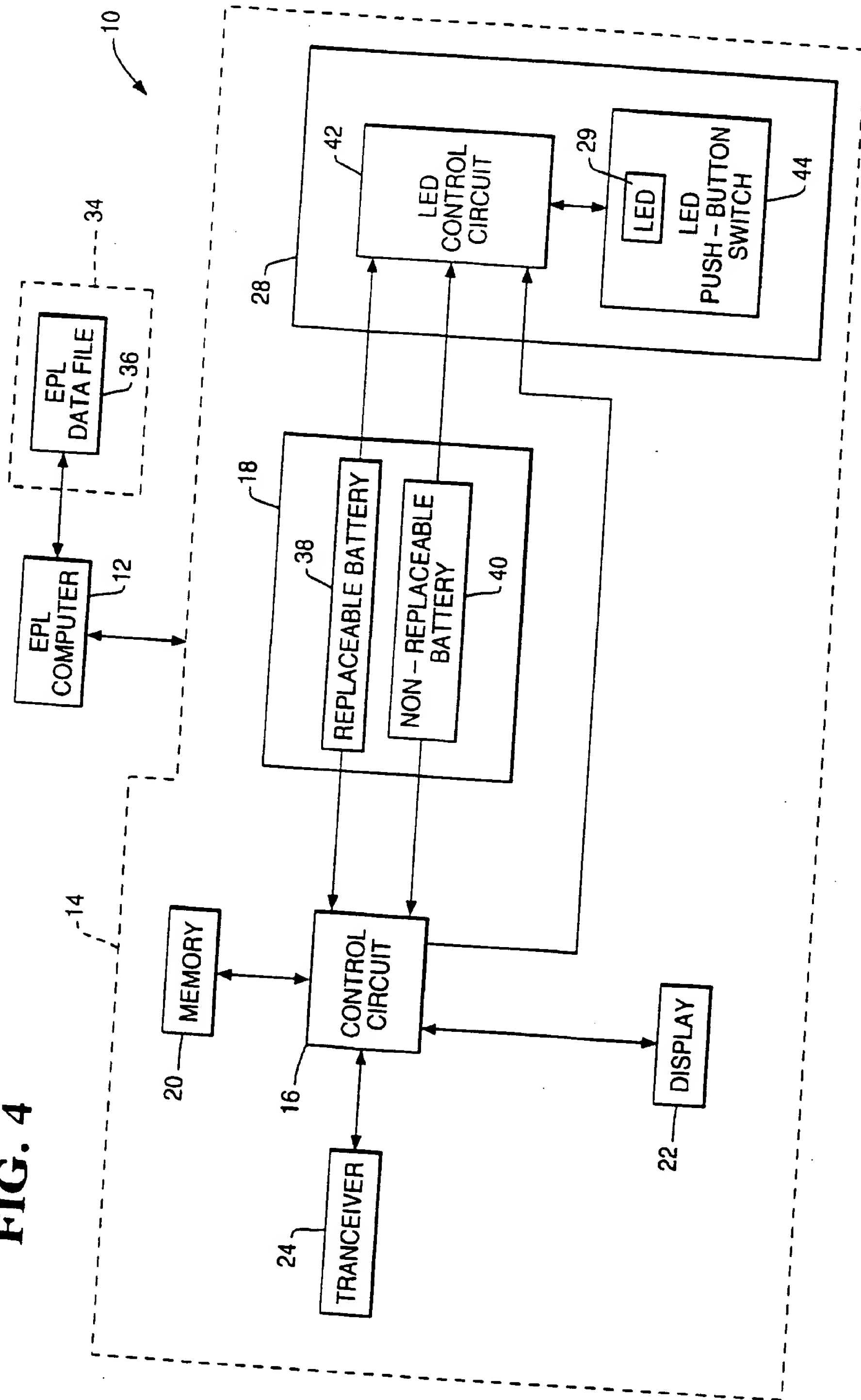
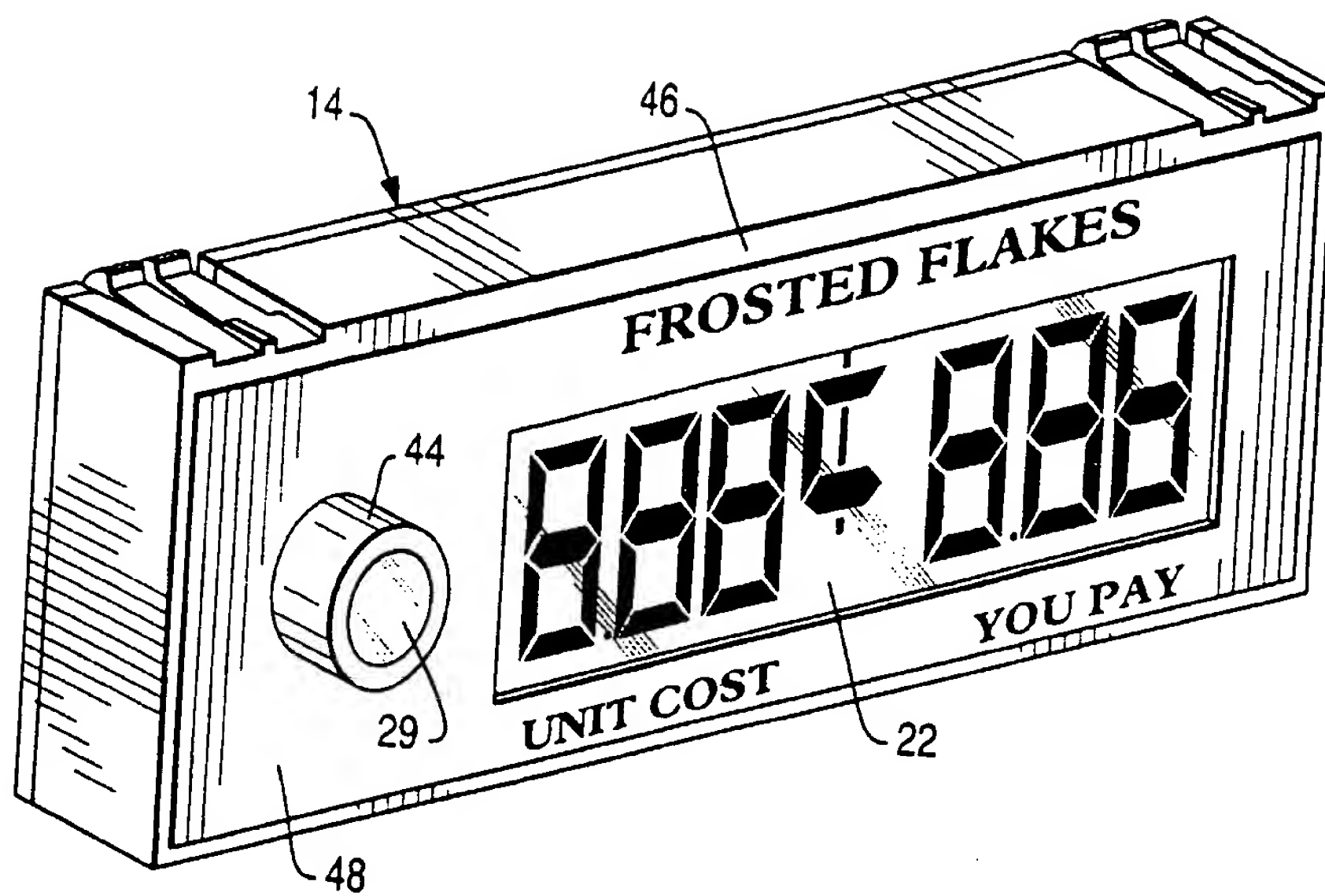
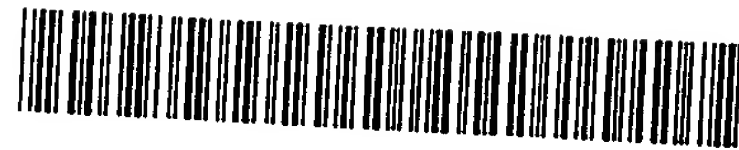


FIG. 5





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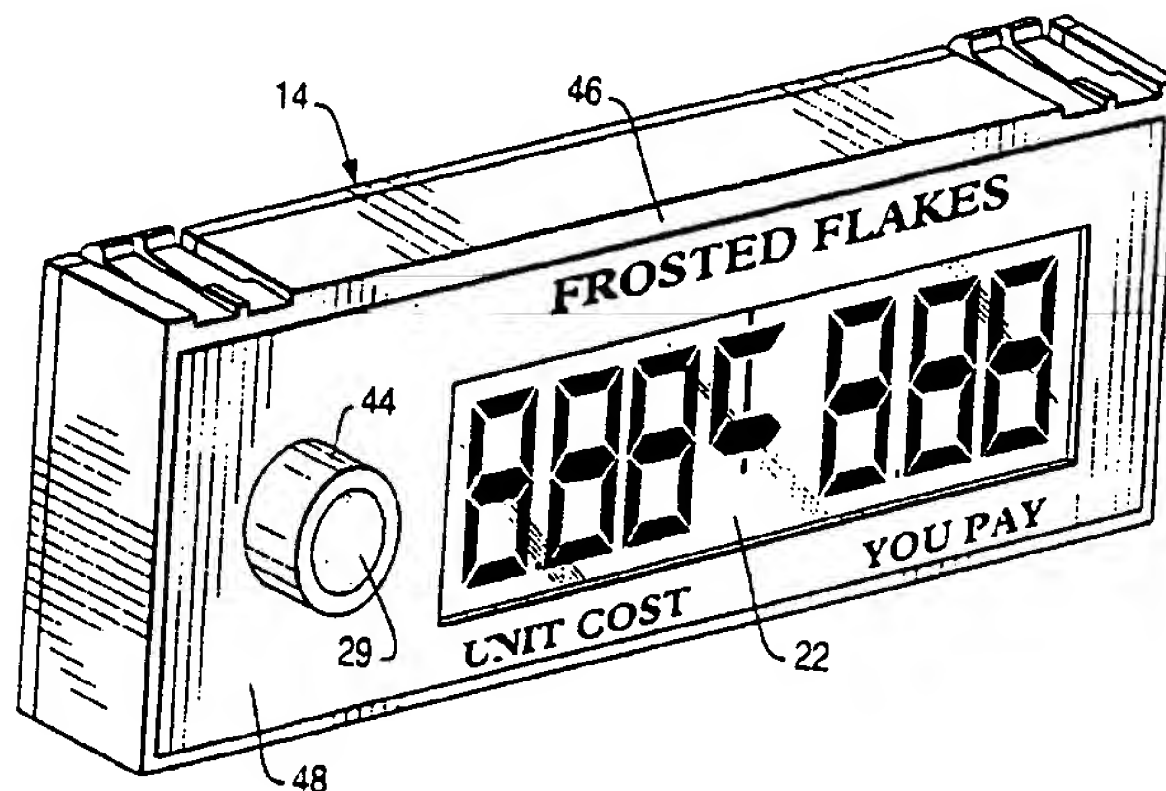
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FIG. 5



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European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 97 30 7960

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP 0 299 355 A (ZELLWEGER TELECOMMUNICATIONS AG) 18 January 1989	1-3,9	G09F9/35
Y	see abstract * column 2, line 26 - column 4, line 32: claims 1-14; figures 1-7 *	4-8	G09F9/33
Y	US 4 924 363 A (BRADLEY F. KORNELSON) 8 May 1990 * column 1, line 6 - column 3, line 44; figures 1-3 *	4-6	
Y	DE 94 06 370 U (MANNESMANN KIENZLE GMBH) 9 June 1994 * page 5, line 1 - last line; figures 1,2 *	5	
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A	EP 0 604 382 A (ELECTRONIC RETAILING SYSTEMS INTERNATIONAL, INC.) 29 June 1994 * column 3, line 41 - column 7, line 3; figures 1-7 *	1-9	TECHNICAL FIELDS SEARCHED (Int.Cl.6) G09F G06F
A	EP 0 284 247 A (ESL, INC.) 28 September 1988 see abstract * column 3, line 38 - column 7, line 44; figures 1-11 *	1-9	
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 4 August 1998	Examiner Greiner, E
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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